

RIPPLE COUNTER CIRCUITS AND METHODS PROVIDING IMPROVED
SELF-TESTING FUNCTIONALITY

ABSTRACT

A ripple counter circuit supports two modes of operation, a user mode and a test mode. In the user mode, the circuit functions as a standard ripple counter, counting in response to first edges (e.g., rising edges) on a clock input signal. In the test mode, the ripple counter circuit alternates between two states. In the first state, the bits all toggle from their initialization values to new values. In the second state, the circuit operates in the same fashion as the user mode. Therefore, the ripple counter circuit counts by one, returning all of the bits to their initialization values. This capability significantly simplifies the testing process, particularly for long ripple counters. Some embodiments of the invention include various control circuits coupled to provide an internal clock signal and/or an initialization signal.